CLAIMS

What is claimed is:

1. A structure for use in fabricating wires, said structure comprising:

a superlattice comprising a template portion, said template portion comprising:

a plurality of channels wherein each of said channels includes two channel sidewalls that each includes an upper edge and a lower edge, said channels each further including a channel bottom that extends between the lower edge of said channel sidewalls, said channel sidewalls and channel bottom defining a trench that has a width, depth and length;

a plurality of top surfaces that extend between the upper edges of the channel sidewalls of adjacent channels, said top surfaces defining plateaus that are located between said channels wherein each of said plateaus has a width and a length and wherein for each of said channels, said top surfaces and said channel sidewalls comprise a top surface/sidewall material and said channel bottom comprises a bottom material that is different from said top surface/sidewall material; and

a wire-forming material in the form of a coating that is located on at least a portion of said top surfaces, said top surfaces and said channel sidewalls, said channel sidewalls and said channel bottoms or said channel bottoms.

2. A structure for use in fabricating wires according to claim **1** wherein said coating of wire-forming material is located only on said top surfaces.

3. A structure for use in fabricating wires according to claim **1** wherein said coating of wire-forming material is located on said top surfaces and extends onto said channel sidewalls.

4. A structure for use in fabricating wires according to claim **3** wherein said coating of wire-forming material extends onto only one of said channel sidewalls for each of said channels.

5. A structure for use in fabricating wires according to claim **1** wherein the width of said trenches and the width of said plateaus are chosen to provide fabrication of nanoscale wires of wire-forming material.

6. A structure for use in fabricating wires according to claim **5** wherein the width of said trenches is from about 1 nm to about 50 nanometers.

7. A structure for use in fabricating wire according to claim **5** wherein the width of said plateaus is from about 2 nm to about 60 nanometers.

8. A structure for use in fabricating wire according to claim **6** wherein the width of said plateaus is from about 2 nm to about 60 nanometers.

9. A structure for use in fabricating wire according to claim **1** wherein said wire-forming material is selected from the group consisting of metals, semiconductors, ceramics and organics.

10. A structure for use in fabricating wire according to claim **9** wherein said wire-forming material is magnetic.

11. A structure for use in fabricating wire according to claim **1** wherein said coating of wire-forming material comprises at least two sub-layers of wire-forming material wherein said sub-layers comprise different wire-forming materials.

12. A structure for use in fabricating wire according to claim **1** wherein said bottom material and said top surface/sidewall material are selected from the group consisting of metals, semiconductors, compound semiconductors, ceramics, insulators and organics.

13. A structure for use in fabricating wire according to claim **1** wherein said coating of wire-forming material is from about 30 to 150 angstroms thick.

14. A device comprising a plurality of wires located on a substrate, said plurality of wires being made by depositing said wire-forming material according to claim 1 onto said substrate using said structure according to claim 1.

15. A device comprising a plurality of wires according to claim 14 wherein said wires cross over each other and wherein at least two structures in accordance with claim 1 are used to deposit said wire-forming material onto said substrate.

16. A device comprising a plurality of wires according to claim 14 wherein said wire-forming material is deposited onto an adhesive layer located on said substrate.

17. A device comprising a plurality of wires according to claim 14 wherein said wire-forming material is deposited onto a polymerizable medium.

18. A method for making a structure that is useful in the fabrication of wires, said method comprising the steps of:

providing a superlattice comprising a template portion, said template portion comprising:

a plurality of channels wherein each of said channels includes two channel sidewalls that each includes an upper edge and a lower edge, said channels each further including a channel bottom that extends between the lower edge of said channel sidewalls, said channel sidewalls and channel bottom defining a trench that has a width, depth and length;

a plurality of top surfaces that extend between the upper edges of the channel sidewalls of adjacent channels, said top surfaces defining plateaus that are located between said channels wherein each of said plateaus has a width and a length and wherein for each of said channels, said top surfaces and said channel sidewalls comprise a top surface/sidewall material and said channel bottom comprises a bottom material that is different from said top surface/sidewall material; and

forming a coating of a wire-forming material that is located on at least a portion of said top surfaces, said top surfaces and said channel sidewalls, said channel sidewalls and said channel bottoms or said channel bottoms.

19. A method for making a structure that is useful in the fabrication of wire according to claim **18** wherein said coating of wire-forming material is formed only on said top surfaces.

20. A method for making a structure that is useful in the fabrication of wire according to claim **18** wherein said coating of wire-forming material is formed on said top surfaces and is extended onto said channel sidewalls.

21. A method for making a structure that is useful in the fabrication of wire according to claim **20** wherein said coating of wire-forming material is extended onto only one of said channel sidewalls for each of said channels.

22. A method for making a structure that is useful in the fabrication of wire according to claim **18** wherein the width of said trenches and the width of said plateaus are chosen to provide fabrication of nanoscale wires.

23. A method for making a structure that is useful in the fabrication of wire according to claim **1** wherein said wire-forming material is selected from the group consisting of metals, semiconductors, ceramics and organics.

24. A method for making a structure that is useful in the fabrication of wire according to claim **23** wherein said wire-forming material is magnetic.

25. A method for making a structure that is useful in the fabrication of wire according to claim **18** wherein said coating of wire-forming material is made by forming at least two sub-layers of wire-forming material wherein said sub-layers comprise different wire-forming materials.

26. A method for making a structure that is useful in the fabrication of wire according to claim **18** wherein said bottom material and said top surface/sidewall material are selected from the group consisting of metals, semiconductors, compound semiconductors, ceramics, insulators and organics.

27. A method for making a structure that is useful in the fabrication of wire according to claim **18** wherein a sufficient amount of wire-forming material is used to form a coating that is about 30 to 150 angstroms thick

28. A method for making a device comprising a plurality of wires located on a substrate, said method comprising the steps of depositing said wire-forming material according to claim **1** onto said substrate using said structure according to claim 1 to thereby form said plurality of wires located on said substrate.

29. A method for making a device comprising a plurality of wires according to claim **28** wherein said wires cross over each other and wherein at least two superlattices are used to deposit said wire-forming material onto said substrate.

30. A method for making a device comprising a plurality of wires according to claim **28** wherein said wire-forming material is deposited onto an adhesive layer located on said substrate.

31. A method for making a device comprising a plurality of wires according to claim **28** wherein said wire-forming material is deposited onto a polymerizable medium.

32. A device comprising;

a substrate that includes a surface; and

a plurality of nanoscale wire bodies that each have a length, said nanoscale wire bodies being located on the surface of said substrate in a parallel manner, said nanoscale wire bodies comprising:

a base portion that is attached to said substrate surface, said base portion having two edges that extend along the length of said nanoscale wire body, said two edges defining the width of said base portion; and

one or more leg portions that extend along the length of said nanoscale wire body and which extend away from the said substrate, said one or more leg portions being located at one or both edges of said base portion.

33. A device according to claim 32 wherein said leg portions extend from only one edge of said base portion.

34. A device according to claim 32 wherein the width of said base portion is from about 2 nm to about 60 nanometers.

35. A device according to claim 32 wherein the distance between the edges of adjacent base portions is from 1 nm to 50 nm.

36. A device according to claim 32 wherein said base portion is about 30 to 150 angstroms thick

37. A device according to claim 32 wherein said wire bodies comprise material selected from the group consisting of metals, semiconductors, ceramics and organics.